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April 28, 1956

VOL. 69, NO. 17 PAGES 257-272

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Noisy Room

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A SCIENCE SERVICE PUBLICATION

GENERAL SCIENCE

Hidden Talent in Misfits

➤ A WAY to salvage precious human talent and to solve the problem of manpower shortage in the ranks of professional men and scientists was proposed by Prof. Donald G. Paterson of the University of Minnesota, in the Walter Van Dyke Bingham lecture at Ohio State University.

We should not only look among high school students of unusual talent for those capable of making scientists of the future, Prof. Paterson suggested, but also search among the street-corner pencil salesmen, elderly persons, crippled, and members of minority groups.

Among occupational misfits and "failures" are to be found many who have been misdirected and gotten into an endless circle of misplacement and failure, unemployment and more misdirection.

As an example, Prof. Paterson cited the case of a man who had drifted from one odd job to another, washing windows, farm labor, house painting and so on, believing himself a failure.

When he was tested, it was revealed that he had exceptional intelligence although he was "very retiring."

On the strength of the tests and his record in high school, the man was urged to attend the University of Minnesota. There he graduated magna cum laude and was made a member of Phi Beta Kappa, honor fraternity. Later he earned an M.A. and a Ph.D. Since then, he has made steady academic progress and is on the faculty of a Midwestern state university.

Another example was a man of 55 who had lost both legs. He had been on and off relief rolls for 30 years and was selling shoe laces and pencils on street corners. Tests showed he had superior intelligence and unusual mechanical ability. He was placed in a machine shop with an on-the-job training program, where he worked a 60-hour week, did well and enjoyed it.

Vocational counseling should be provided and improved, Prof. Paterson urged. Otherwise our very efforts to remedy current manpower shortages may result in the tragic misplacement of individuals who have no particular scientific or technical talents.

Prof. Paterson pointed to the error of a widespread practice in business and industry of having separate employment departments in a given company for hiring factory workers, clerical workers and salesmen.

This practice is based on the mistaken assumption that applicants can and do correctly classify themselves.

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VITAL STATISTICS

Chances of Twins

➤ THE CHANCES of having twins, triplets or even quintuplets are determined by race, age and the number of children the mother has already had.

Women under 20 have twins at the rate of six per 1,000 live births, while women aged 35 to 39 have twins at a rate of about 17 per 1,000 live births. After 39 the rate starts to decline and, for women over 45, it is only seven per 1,000 live births.

In *GP* (April), published monthly by the American Academy of General Practice, Dr. Alan F. Guttmacher says statistics show the greatest frequency in multiple births occurs among Negroes, the lowest among Mongols.

Incidence of quadruplets among whites in the United States is once in 570,196 and among Negroes once in 237,897. Triplets in whites occur once in 9,828 births and in Negroes, once in 5,631. Twins showed a similar affinity for the colored, occurring once in 92.4 white births and once in 73.8 Negro births.

Women who have already had children are more susceptible to multiple births, Dr. Guttmacher points out. In the 35 to 39 age group, which has the maximum twinning incidence, he finds that mothers in their first pregnancy produce 13.6 twins per 1,000 births, while women of the same age group with their seventh pregnancy have a likelihood of 21.9 twins per 1,000 births.

Six is the greatest number of babies delivered at one time, despite extravagant claims to the contrary, he declares. In none of the several proved cases of sextuplets has any single member survived more than 24 hours.

Quintuplets are not uncommon, however.

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ENTOMOLOGY

Balanced Diet For Insects

➤ INSECTS need vitamins, studies by two entomologists who raised onion maggot larvae on controlled diets have shown.

The maggots were found to need vitamin B-12, niacin, riboflavin, thiamine and folic acid, as people do. The research showed the insects also need biotin, pantothenic acid, choline and pyridoxine.

The insects were raised in a germ-free environment by Dr. W. G. Friend, Ottawa entomologist, and Dr. R. L. Patton of Cornell University, who report in the *Canadian Journal of Zoology* (April) that a lack of necessary vitamins retards the insects' development.

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•RADIO

Saturday, May 5, 1956, 2:05-2:15 p.m., EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Finalists of the Seventh National Science Fair will describe their projects, speaking from Fresno, Calif.; Worcester, Mass.; Miami, Fla.; Butte, Mont.; Allentown, Pa.

VITAL STATISTICS

U.S. Birth Rate May Decline

➤ THE NATION'S high birth rate may decline for a few years, P. K. Whelpton, director of the Scripps Foundation for Research in Population Problems at Miami University, Oxford, Ohio, predicted.

If the high postwar birth rate is to continue, Mr. Whelpton reported, it will either be because the present tendency to marry and have two or three children while young continues to spread fairly rapidly, or because there is a substantial rise in the number of families with four to six children.

"If neither of these happens," Mr. Whelpton forecast, "the birth date will resume its former decline for a few years at least."

During the ten years from 1945 to 1955, the Foundation's studies showed, American women have been marrying earlier and have been becoming mothers at a younger age than in the preceding generations.

During these same years, the number of childless families has been decreasing, while the number of two- and three-children families has been increasing.

The studies also show, Mr. Whelpton said, that the four-children families showed small gains, but those with six or more children became less common.

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CARDIOLOGY

Produce Heart Damage By Cold for First Time

➤ DAMAGE to the heart's blood vessels by exposure to cold has been produced for the first time in more than half of a group of normal laboratory rats fed a normal diet.

The animals developed fatty deposits in the heart blood vessels when kept for 10 to 18 months at freezing temperatures, Drs. E. A. Sellers and Rosemary W. You of the University of Toronto report.

The growing interest in hypothermia, or so-called frozen sleep, for surgical operations, and in injuries produced by cold and in acclimatization to low temperatures led the Toronto scientists to their research.

Fatty heart arteries were produced in rats in six weeks of cold when fed a high-fat, high-cholesterol diet with choline. Hearts in such rats were also damaged when not fed choline.

Further experiments along these lines my be "profitable," the scientists state in the *British Medical Journal* (April 14).

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MEDICINE

New Key to Artery Ill

South African scientists discover that deposits of cholesterol in arteries are affected by kind of fat eaten. Hard fats cause high blood cholesterol levels.

➤ THE KIND of fat you eat rather than the amount is what determines whether or not you will have a lot of cholesterol in your blood to harden your arteries and perhaps bring on a heart attack or a stroke.

This finding of South African scientists is now being reported to U. S. scientists. (See p. 261.)

Those who already have a high blood cholesterol content may before long be able to take daily doses of a special oil to reduce the cholesterol while they go on eating a normal diet. This is a future promise of the research.

Whether this will pull the cholesterol out of deposits in artery walls and thus restore the arteries to normal is not known. Long-term experiments to learn this are now under way.

The new and hopeful approach to stopping the nation's greatest disease killer, atherosclerosis and consequent heart disease, results from a discovery by a team of South African scientists at the University of Cape Town.

The leader of the team, Dr. B. Bronte-Stewart, has gone to Japan with Dr. Paul Dudley White of Boston, consultant on President Eisenhower's heart attack. With Dr. Ancel Keys of the University of Minnesota, they are making a study of blood cholesterol and diet in the Japanese.

The fats that put a lot of cholesterol in the blood are animal fats, or hard fats. Beef drippings, butter, eggs and beef lead to a prompt and significant increase in blood cholesterol, Dr. Bronte-Stewart and associates found by diet experiments with humans in South Africa.

When they fed vegetable oils, such as olive oil, sunflower-seed oil and ground-nut oil in equivalent amounts, blood cholesterol did not increase.

When the ground-nut oil was fed in hardened or hydrogenated form, however, blood cholesterol promptly increased.

The findings do not mean that a person cannot eat hard fat such as occurs in eggs, beef and other animal fat. It is the balance between the hard fats and the non-hard fats that is important.

For example, in some experiments Dr. Bronte-Stewart fed his diet group as many as 12 eggs at one time, fried in hydrogenated fats. Their blood promptly showed a high amount of cholestrol. But if he fed the same number of eggs fried in peanut oil, the cholesterol in the blood did not increase.

Fats contain fatty acids. Some are what chemists call saturated, other are unsaturated. Animal fats contain only a small proportion of unsaturated fatty acids. Vegetable oils and fish oils contain mostly unsaturated fatty acids.

Dr. Bronte-Stewart and his group were able to separate from sunflower-seed oil a highly unsaturated and a saturated fatty acid fraction. They fed these to a patient whose blood cholesterol had been raised by adding cholesterol to his basic diet.

When the unsaturated fraction was fed, the blood cholesterol promptly fell, even though the patient went on getting extra cholesterol in his diet. When the saturated fraction was fed, the cholesterol in his blood rose.

These experiments led the Marine Oil Refiners of Africa Ltd. to divide fats into fractions. Using the solexol process they got on a commercial scale a cooking fat which they call Glennol. This is believed to contain a higher concentration of unsaturated fatty acids than the fat naturally contains.

One ounce of this taken daily for seven weeks reduced the blood cholesterol of one patient from 317 to the normal 245, although the patient continued to eat his usual normal diet.

Although Glennol is now on the market in South Africa, the Cape Town scientists are not making any claims for it until they have done further tests on patients.

They also point out that other factors besides fat in the diet may play a role in hardening of the arteries in some cases. Lack of physical exercise, occupational tensions, emotional states and perhaps also heavy smoking are among such factors.

The clue to the new finding about blood cholesterol and different kinds of fat in the diet came when the Cape Town scientists repeated some experiments done elsewhere. These earlier experiments seemed to show that a person could take any amount of cholesterol by mouth without raising the cholesterol in the blood.

The original experiments had been done giving the cholesterol in oil. The South African group by chance gave it in a hard fat, and found the blood cholesterol rose to a high level. This started them on further research.

The findings explain for the first time why Italians and Greeks, who eat a lot of fat in the form of olive oil, and the Eskimos, who live on fat which is fish fat, do not have large amounts of cholesterol in their blood and have very little heart and blood vessel disease, compared to "sophisticated" populations such as Americans and northern Europeans who eat most of their fat as hard animal fat.

The Japanese eat much fish, so the doctors in Japan expect to find their blood cholesterol lower than that of peoples eating animal fat.

Associated with Dr. Bronte-Stewart in his research were Drs. L. Eales, A. Antonis and J. F. Brock of the University of Cape Town.

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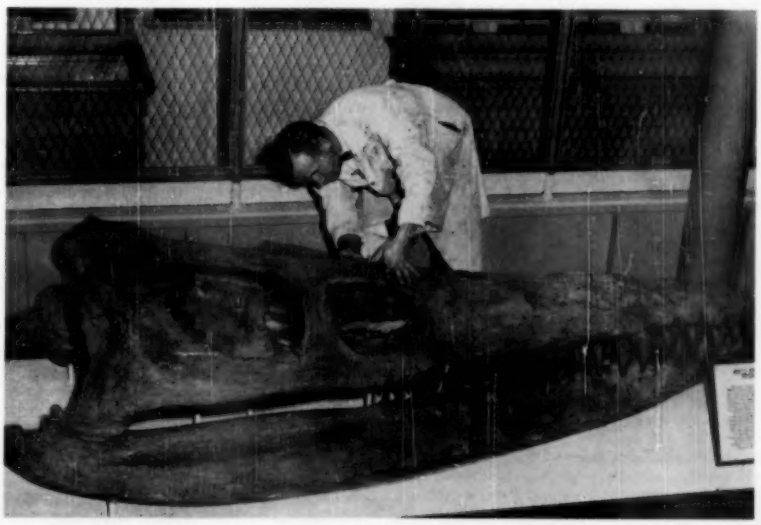

LARGEST REPTILE SKULL—This fossil sea monster with a nine-foot skull and 80 spiky teeth is being restored for exhibition at Harvard University's Museum of Comparative Zoology. The Kronosaurus *skeleton, 110,000,000 years old, will stretch at least 50 feet when mounted. Front pair of large holes were eye spaces, and jaw muscles were bunched in the second pair.*

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

➤ **Demographia.**—Le Fundation Scripps pro Recercas Demographic conclude ab analyses statistic que le accrescite natalitate observate in le Statos Unite durante le passate decennio corresponde a nulle marcate augmento del numero median de infantes per familia sed reflecte le facto que le feminas statounitese se marita plus juvene e deveni matres plus juvene. Ab 1945 usque a 1955 le procentage del maritate feminas de inter 20 e 24 annos de etate cresceva ab 60 a 70, le procentage de tal feminas habente nulle infantes decresceva ab 27 a 17, e le procentage de tal feminas habente duo infantes cresceva ab 20 a 29.

➤ **Cosmetica.**—Excellente qualitates cosmetic de grassia de visones (*Mustela vison*) esseva discoperite accidentalmente per un ranchero de New Jersey. Ille notava que su manos esseva semper multo dulce e delicate post que ille habeva occidite visones e removite lor pelles. Ille consultava un pharmacista; le pharmacista le refereva a un professor de chimia pharmaceutic; le professor executava experimentos que verificava le observationes del ranchero; e finalmente representantes del industria cosmetic esseva informate. Il pare que illes es multo interessate.

➤ **Aeronautica.**—Predice L. A. Ohlinger del Aerocompania Northrop, S. A., que le introduction de aeromotores a energia atomic va resultar in le disveloppamento de un systema de aeroremorcage in que series de comparativemente parve aviones essera trainate per un gigante "aerolocomotiva" atomic. Le copulage e le discopulamento se facera in volo, e le necessitate de atterrar le "locomotiva" va resultar primarimente del desiro del pilotas de visitar lor familias.

➤ **Recercas de Cancere.**—Un nove e promittente technica pro le studio del reactiones de cellulas canceric sub le influentia de agentes chimotherapeutic esseva disveloppate al Universitate California. Le methodo consiste in le injection, in le fluido abdominal de muses, de cellulas canceric in stato completemente individualisate. In le fluido illos se multiplica liberemente. Simultaneemente illos causa un augmentation del fluido. Si isto es modificate per le injection de un agente chimic, le effecto super le vita e le potentia regenerative del cellulas canceric se presta a un facile studio quantitative.

➤ **Diabete.**—Esseva reportate in februario que promittente experimentos esseva in progresso in re le substitution de medicamentationes oral pro le injection de insulina in certe typos de diabete. Le medicamentos in question esseva derivatos del drogas sulfa. Illos es non ancora preste al uso general, sed incoragiante resultatos es nunc publicate per duo gruppos de experimentatores al Universitate Pittsburgh e a un del hospitales de Oakland in California. A Pittsburgh, 34 ex 44 diabeticos respondeva significativemente al administration de un del nove drogas. A Oakland tres ex sex patientes respondeva favorabilemente.

➤ **Hydrographia.**—In 1950 le Statos Unite utilisava pro objectivos agricole, industrial, etc. un quantitate total de aqua que haberea sufficite a coperir le integre pais a un profundidate de plus que 3 cm. Isto representa circa 15 pro cento del total quantitate de aqua potentialmente disponibile. Pro comprender que le question del ressources de aqua deveni de plus in plus problematic, on debe considerar que le remanente 85 pro cento es aquas de accessibilitate multo plus costose que le 15 pro cento jam in uso.

➤ **Zoopathologia.**—Un elephante feminin de 47 annos de etate ha morite al jardin zoologic de San Francisco ab disfallimento cardiac, explicate al autopsia como consequentia de arteriosclerosis. Le patiente habeva vivite al zoo de San Francisco depost 1925. Su morbo se distingueva ab arteriosclerosis human per le absentia de depositos grasse in le parietes del arterias minor. Il pare que isto es le prime tal caso reportate in un patiente elephantin.

➤ **Chimia.**—Proque atomos e componite radicales in stato libere possede un electron impare que aspira a entrar in composition con un altere entitate chimic, illos es multo instabile, e le studio de lor structura es difficilissime si non impossibile. Un nove aspecto del question esseva signalate per Dr. H. P. Broida del statounitese Bureau de Standards. In un discurso al Societate Philosophic de Washington Dr. Broida discuteva le possibilitate que atomos e radicales libere deveni satis stabile quando illos es capturate in solidos a temperaturas de infra minus 200 C.

➤ **Recercas de Cancere.**—Multe formas de cancere hepatic in humanos exhibi characteristicas que se trova normalmente in le hepate del embryon de animales plus basse in le scala evolutionari. Le cellulas de certe tal canceres es simile al cellulas hepatic del embryon del tortuca. Certe altere tal canceres forma massas del typo trovate in le hepates embryonic de serpentes. Ancora altere characteristicas de canceres hepatic human se retrova in le hepates embryonic de porcos, gallinas, pisces, rattos, etc.—Constatationes de Dr. H. Elias del Universitate Chicago.

➤ **Technologia.**—Le Compania de Regulatores Minneapolis-Honeywell ha recipite 1200 entratas in su concurso de nove ideas pro nove usos de su commutatores. Le inventiones submittite include un reductor del volumine acustic del radio que se actiona automaticamente quando on usa le telephono. In un altere invention un commutator automatic actiona un sonalia quando le piscina es plen de aqua. Le majoritate del 1200 inventiones es ingeniose. Alicunes es mesmo practic.

➤ **Demographia.**—Le statounitese Naval Laboratorio de Recercas Arctic a Point Barrow in Alaska reporta que le fertilitate de feminas eschimo es triplicate sub le influentia del typo de alimentation apportate per membros del racias blanc.

➤ **Atomos pro Pace, S. A.,** es le nomine de un corporation cuje "commercio" consiste in accordar un precio annual de circa $75.000 e un medalia a un individuo o un organisation de alte meritos relative al causa del utilisation pacibile del energias atomic. Le establimento del precio, con ressources financiari contribuite per le Fundo del Compania de Motores Ford, esseva tentativemente annunciate al conferentia atomic de Geneva in augusto 1955. Le final specificationes organisatori, nunc publicate, provide que le distribution del precio es administrate per un consilio de septe individuos ab varie campos de activitate. Candidatos pro le precio pote esser proponite per non importa qual persona in non importa qual parte del mundo. Le candidatos pote representar non importa qual nationalitate, e lor contribution al causa del uso pacibile de energias atomic pote esser directe o indirecte. Le presidente del corporation es Dr. James R. Killian Jr.

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GENERAL SCIENCE

Reading Interlingua

➤ YOU CAN READ Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, SCIENCE SERVICE'S Interlingua Division, 80 E. 11th St., New York 3, N. Y.

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MEDICINE

Butter to Spare Arteries

Treating butter and spreads made from hydrogenated animal fats with special vegetable oils is suggested as method of reducing cholesterol in blood.

➤ FORTIFYING BUTTER and other spreads for bread with special vegetable oils to fight artery trouble and consequent heart disease was discussed at meetings of the Federation of American Societies for Experimental Biology in Atlantic City, N. J. (See p. 259.)

Butter to which a special soy oil was added lowered blood cholesterol of humans fed this three times a day with an otherwise normal diet, Drs. D. W. Peterson, C. W. Nichols Jr., N. F. Peek and I. L. Chaikoff of the University of California at Davis and Berkeley, Calif., reported.

The persons in this diet experiment ate half an ounce of butter with their meals. At the end of one week on ordinary butter, the cholesterol in their blood amounted to 218. Then they ate with each meal half an ounce of butter of which about one-seventh of its weight was soy sterols. After one week of this, the blood cholesterol was down to 194. During the third week, they ate ordinary butter again and the blood cholesterol went to 209.

Experiments with rats also show a difference in blood cholesterol related to the type of fat eaten. These experiments were reported by Drs. Lilla Aftergood, Roslyn B. Alfin-Slater and Harry J. Deuel Jr. of the University of Southern California, Los Angeles.

Animals on a diet containing lard consistently had more cholesterol in their blood and their livers than animals on a diet containing an equivalent amount of cottonseed oil. The differences became more pronounced as the animals continued on the two diets.

A sex difference was also found. Females had more cholesterol in their blood and less in their livers on both diets.

Some of the causes for the accumulation of cholesterol in the liver when lard is the source of fat in the diet, the scientists suggested, are the greater stability of the more saturated fatty acids of cholesterol and the inadequate amount of other fatty chemicals, called phospholipids, which are probably necessary for proper transport of cholesterol.

Cholesterol in the blood increased in monkeys when they were changed from a diet with corn oil as the fat to one with a hardened, or hydrogenated, vegetable oil, Drs. O. W. Portman, F. J. Stare and D. Bruno of Harvard School of Public Health, Boston, reported.

They also found that the monkeys had more or less cholesterol in their blood according to whether they were fed high or low fat diets.

Mild kidney damage may be a possible cause of fatty deposits in the heart's arteries. Evidence for this from studies of animals was reported by Dr. Robert W. Wissler and William L. Bradford, Robert F. Allen and Richard F. Moy of the University of Chicago.

Human patients suffering mild kidney damage, the scientists believe on the basis of their studies, need a different dietary approach in cases of hardening of the arteries and coronary heart disease than the patients who do not suffer from kidney damage.

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MEDICINE

Polio Methods Help Save Head Injured

➤ EXPERIENCE in treating polio patients with the serious, bulbar form of the disease has led to a way of saving some patients with very severe head injuries, Dr. Ernest W. Mack of Reno, Nev., reported at a meeting in Honolulu of the Harvey Cushing Society, America's largest neurological society.

The treatment Dr. Mack borrowed from polio treatment is tracheotomy, in which an opening is cut through the neck into the windpipe. A tube is then inserted into the windpipe. Object of the operation, for both bulbar polio patients and for those with head injuries, is to provide an airway so the patient can breathe. In both, damage to a certain part of the brain can interfere with breathing.

For the head-injured patients, Dr. Mack said, the "essence" of the treatment is to perform the tracheotomy operation immediately upon diagnosis without waiting for signs of oxygen lack to develop, as has often been done in the past.

The patients he treated had all had very severe head injuries, although not all had open wounds. All showed signs of severe brain damage, some so severe that they were not expected to recover.

Some of the patients, he reported, "have made rather remarkable recoveries and have returned to gainful occupation."

G-suits such as flyers wear for protection against too great gravity pull are being adapted to help patients undergoing operations on the spinal cord, Drs. W. James Gardner and Donald F. Dohn of Cleveland reported.

The simplified G-suit they use helps prevent too great a drop in blood pressure when such operations are done with the patient sitting up.

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BLOODROOT FAMILY—The white flowers of this member of the poppy family can be seen about this time of year from Nova Scotia south to Florida and Alabama, and west to Manitoba, Nebraska and Arkansas. Cy Coleman of Detroit, Mich., took this picture, awarded honorable mention in the plant section of the Chicago International Nature Photo Exhibition.

CHEMISTRY

Year-Around Mushrooms Grown on Waste Sawdust

➤ MUSHROOMS grown on the waste sawdust of pine, oak, gum and magnolia trees may soon be available to American gourmets throughout the year.

Home-grown mushrooms nurtured in sawdust were shown to the American Chemical Society meeting in Dallas, Tex., by Dr. S. S. Block of the University of Florida, who developed them. Growing mushrooms on waste wood products is an adaptation of an ancient Japanese practice, Dr. Block explained.

The Japanese used to inject mushroom fungus into a hole punched into a forest log, plug up the hole and in a year and a half, mushrooms would appear.

The Florida scientist and his co-worker, George Tsao, use a ton of ordinary sawdust, with oatmeal mixed in and, in two weeks, grow 500 pounds of fresh mushrooms.

Dr. Block said his sawdust-grown fungus food is important because the mushrooms produced in his experiments can be raised at ordinary room temperatures. This could mean the elimination of seasonal mushroom growing and the world-wide mushrooming of the mushroom, whose commercial growth now is restricted to cooler regions.

It could also mean a use for the more than 75,000,000 tons of sawdust now annually classed as waste.

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ASTRONAUTICS

Plan Missile to Moon

To land 50 pounds of instruments on the lunar surface would require a three-stage rocket weighing about a million pounds, an engineer for Rand Corporation calculates.

➤ INTERPLANETARY MISSILES zooming around Venus and Mars and landing on the moon are being planned by leading rocket engineers and scientists, who reported their progress at a symposium on earth satellites at the Franklin Institute, Philadelphia.

A three-stage rocket weighing about a million pounds would be needed to place 50 pounds of scientific instruments on the moon's surface, George H. Clement said. The senior engineer at Rand Corporation, Santa Monica, Calif., an independent research facility engaged in defense work, said deceleration rockets and energy-absorbing devices would be needed to land the instruments in usable condition.

To reach the moon, the vehicle would need a velocity of about 35,000 feet per second at an altitude around 350 miles above the earth's surface, Mr. Clement calculates. Less push would have to be given to the rocket if it were fired from the side of the earth facing away from the moon at the time of launching.

Krafft A. Ehricke, head of preliminary missile design at General Dynamics Corporation's Convair Division in San Diego, said a "crowning accomplishment" for humans would be landing satellites on the moon by remote control, then using television to study lunar conditions.

The chairman of the International Geophysical Year's panel on earth satellites, R. W. Porter, a General Electric Company consultant, proposed a method for recovering photographs and biological samples sent up in satellites.

A balloon with a thin metal skin, he said, would provide the required slowing action and withstand the high temperatures generated during descent. A small rocket would start the balloon spiraling down, and a radio transmitter in the balloon would make a brief broadcast so the object could be located.

A payload of about 100 pounds, about five times that now planned for the first earth satellites to be launched during the International Geophysical Year, would be needed to scan the heavens from above the earth's atmosphere, Dr. Lyman Spitzer jr., director of Princeton University Observatory, calculates.

A stabilized telescope, a spectroscope and auxiliary equipment on a satellite, he said, "might well revolutionize the study of astrophysics."

Among the problems that could be investigated with such a set-up are: 1. the detailed distribution with height of all elements in the earth's upper atmosphere; 2. the composition of the atmospheres of the moon, Venus, Mars and other planets; 3. the abundance of the main atomic and molecular species in interplanetary, interstellar and intergalactic space; and 4. the temperature and compositions of stars with high surface temperatures and the coronas surrounding these stars.

Dr. Homer E. Newell Jr. of the Naval Research Laboratory, Washington, said decisions concerning what experiments would be done from the satellites are now being made. Paths the satellites will take as they whirl overhead, he noted, will be made widely known so as many people as possible can view the earth-circling moonlets.

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STATISTICS

U. S. Women 42 to 51 Have Had Fewer Children

➤ AMERICAN WOMEN now between the ages of 42 and 51 have had fewer children than the women who are now younger or older, a study made by the Scripps Foundation for Research in Population Problems at Miami University, Oxford, Ohio, shows.

The small families borne by women who were born between the years 1905 and 1914 represent the end of a decline in family size that began more than a century ago in the United States, P. K. Whelpton, director of the Foundation, states.

Among the women born in 1875-1879, for example, there were about 380 births per 100 women, compared to 232 births per 100 women for the 1905-1914 group. As another illustration of the size of the decline, Mr. Whelpton points out that 100 women who were born in the early 1800's probably had between 700 and 900 births on the average, if they lived to age 50.

Final figures, Mr. Whelpton reports, are not available for the women born between 1915 and 1919, "for they were having only their 36th to 40th birthdays in 1955," but their completed fertility has been estimated and is expected to be 250 per 100 women.

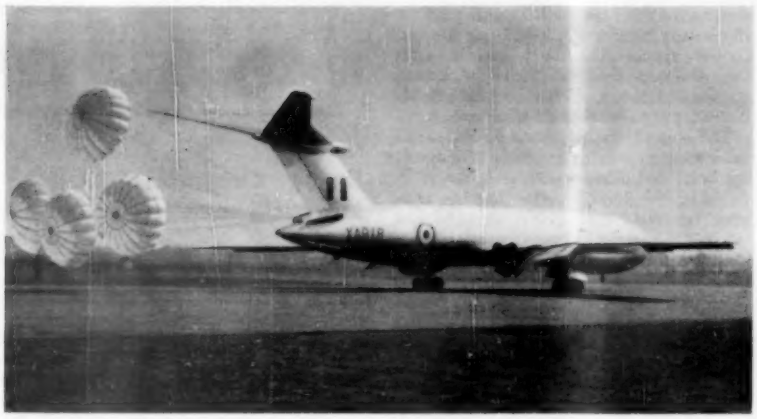
It is among the younger women of the nation, Mr. Whelpton states, that larger increases in the average family size may be occurring. Among the 1920-1924 group, for example, there have been about 234 children born per 100 women already.

Among still younger women, those now 18 to 30 years old, there has been a marked tendency to marry and start families at younger ages.

This probably does not mean a corresponding increase in the average number of children when their families are completed.

Science News Letter, April 28, 1956

ATOMIC EXHIBIT VIEWED—Teen-age scientists, members of the Junior Washington Academy of Sciences, learn how engineers control the explosive release of nuclear energy in a reactor. The exhibit, featured in the Second Annual Atomic Exhibition, uses electronic instruments to simulate a reactor's operation. Here Rober Menzer, 17, president of the group, starts the reactor as Minneapolis-Honeywell engineer Bill Forsythe explains how the various electronic units measure and control the reaction.



FOUR-PARACHUTE BRAKE—Performance details of this Handley Page Victor jet bomber are still secret but five of them were recently seen in England for the first time by the public. Four parachutes are used to brake the crescent-wing, high-altitude, long-range strategic bomber's landing.

PHYSIOLOGY

Find Brain's Pain Center

➤ A CENTER for pleasure and one for pain or discomfort have been located in the brain.

The locations were reported by Dr. Jose M. R. Delgado and his aide, Ben Bursten, of Yale School of Medicine, New Haven, Conn., at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

The pleasure and pain centers were found in monkey brains. Presumably human brains have the same centers in about the same locations. Knowledge of these areas as well as of areas related to emotions is important, Dr. Delgado pointed out, because it may lead to better understanding and treatment of mental disturbances in humans.

The pleasure areas in the monkey brain are the septum and putamen deep in the middle of the brain. The discomfort or pain area is the orbital cortex of the frontal lobe.

Other areas of the brain were found to be neutral either to pleasure or discomfort.

The Yale scientists used six monkeys in their research. By means of electrodes thinner than a human hair, implanted within the various brain areas of each monkey, the scientists were able to stimulate the different areas electrically, and observe and record the reactions of the animals.

The monkeys were free to move about in a cage equipped with an especially designed floor. When the monkey moved about on one part of the floor, the animal automatically received electrical stimulation in the brain. The other half of the floor was a "relief area" with no stimulation, and the monkey learned to move to that area to avoid any brain stimulation.

The Yale scientists, using electrical computers to record the monkey's movements during the tests, discovered the monkeys preferred to go to the "hot" side of the floor when electrical stimulation was being aimed at the septum and putamen area, which are the pleasure areas.

In contrast, the monkeys quickly jumped for the "relief" part of the floor when stimulation was aimed at the orbital cortex of the frontal lobes, the discomfort area.

Science News Letter, April 28, 1956

TECHNOLOGY

Simple Oxygen Mask For Airliners Developed

➤ A SIMPLE and almost foolproof oxygen mask for airline passengers has been developed, the Aero Medical Association meeting in Chicago was told.

The safety device is designed to supply 100% oxygen to passengers in the event of pressurization loss at high altitude, its developer, John J. Swearingen of the CAA Medical Research Laboratory, Columbus, Ohio, told the Association.

The adhesive type oxygen mask is made so that:

1. It cannot be put on upside down by mistake.
2. It will fit, with one size, the different facial contours of adults and children.
3. It can deliver 100% oxygen.
4. It can be attached without straps, bands or buckles.
5. It cannot be dislodged by head movement or perspiration.
6. It is comfortable, lightweight, inexpensive and disposable.

Science News Letter, April 28, 1956

NUTRITION

Pump Makes It Easier To Tube Feed Patients

➤ TUBE FEEDING, a somewhat unpleasant but necessary method of getting nourishment into some patients who cannot or will not eat, is reported easier for the patient as well as more satisfactory medically when a new feeding pump is used.

Patients can sit up in bed and read or watch television while taking nourishment pumped through a tube inserted through a nostril and down into the stomach or intestines.

The pump can deliver precise quantities of food of desired consistency over long periods of time or fairly rapidly. A quart of liquefied food can be fed slowly and steadily over a period of ten hours, or the same amount can be fed in half an hour if the patient's system can assimilate it.

The pump is the result of cooperative work by Dr. James Barron, associate surgeon at Henry Ford Hospital, Detroit, who pioneered in perfecting the new feeding process, and the Engineering Division of the Chrysler Corporation, which designed the food pump.

Plans and manufacturing rights have been turned over to the hospital by Chrysler Corporation. James C. Zeder, corporation vice president, made the presentation in behalf of the auto company.

Science News Letter, April 28, 1956

SURGERY

Can Graft Treated Bones Across Different Species

➤ BONE BANKS for humans can be enlarged in case of emergency by addition of especially treated bones from cows or other animals.

The method of treating the bones and success in cross-species grafting of the treated bone were reported by Lt. Lloyd A. Hurley and Cdr. Fred L. Losee of the Naval Medical Research Institute, Bethesda, Md., at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

The bones for grafting were boiled with ethylenediamine in a special apparatus and then treated with absolute alcohol. This removed the proteins, sugars, starches and fats from the matrix of the bone. These are the substances believed to cause ill effects in cross-species grafting.

The treated bone is very white, easily shaped and extremely porous. It is not subject to decay and can be easily sterilized by boiling or autoclaving.

The extreme porosity of the treated bone and absence of dead organic debris facilitate the recipient's blood getting in and starting the rebuilding of new bone.

Bone from rats, cows and humans treated in this way was successfully transplanted into the hind legs of dogs with no ill effects and with successful takes of the grafts.

Science News Letter, April 28, 1956

BIOCHEMISTRY

Hallucination Snuff Yields New Alkaloids

➤ SNUFF from tree seeds was used by pre-Columbian Indians for the purpose of producing hallucinations.

Modern efforts to identify the chemicals responsible for these weird effects on the senses have yielded new information on how the body breaks down the chemical tryptophan, the American Chemical Society meeting in Dallas, Tex., was told.

Reporting on work by Drs. E. C. Horning and M. S. Fish of the National Heart Institute, Bethesda, Md., Dr. Horning said three authentic samples of "yopo" or "cohoba" snuff had been analyzed.

The powerful stimulant principle is said to come from seeds of *Piptadenia peregrina* and *Piptadenia macrocarpa* trees and to belong to the chemical family of the alkaloids.

One of the samples of snuff was brought from Brazil in 1882. The others are more recent, one from Venezuela in 1949, the other from Colombia in 1954-1955.

Analysis involving the chemical breakdown of the unfamiliar alkaloid along the expected lines of utilization of similar compounds by the body showed a pattern of occurrence of indole bases that led the Heart Institute chemists to suggest they have found in this material a new route of tryptophan metabolism.

Indole alkaloids show a variety of unrelated effects on the body, Dr. Jurg A. Schneider, CIBA Pharmaceutical Products, Inc., Summit, N. J., reported. Some lower blood pressure and heart rate, others have the opposite effect. Indole itself is necessary for production of protein, Dr. Schneider explained.

Science News Letter, April 28, 1956

NUTRITION

Monkey on Egg Diet Has Heart, Artery Damage

➤ A MONKEY with a strong liking for eggs ended up with heart and artery damage and a skin ailment as a result of eating too many eggs, Dr. George V. Mann of the U.S. Public Health Service laboratories in Framingham, Mass., and Dr. Stephen B. Andrus of Harvard School of Public Health, Boston, reported at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N.J.

The monkey, bought in India, was brought to the United States and raised as a household pet until it became too unpredictable and dangerous to handle. It was obtained by the Harvard School of Public Health from an animal dealer.

In the nutrition laboratories, the monkey refused to eat conventional experimental diets. A special diet, composed mostly of dried egg yolks with added pure cholesterol, minerals and vitamins, was found to be to the monkey's liking.

After three and a half years on the diet the animal's blood had a high fat, or cholesterol, content. Yellowish patches and nodules appeared on the monkey's hands, feet, elbows and buttocks, like the xanthomatosis of humans. At this time the monkey showed no signs of heart disease.

The animal was sacrificed at this point. Examination revealed extensive damage in the heart and blood vessels.

"Even the blood vessels in the brain were involved," the scientists said, "a finding that is unusual in experimental animals, but common in human subjects.

"The skin nodules were entirely like those seen in people with xanthomatosis.

"Altogether, this seems to indicate that the quality of diet does have something to do with the development of excessive fat levels in the blood, and with the vessel and skin changes of xanthomatosis."

Science News Letter, April 28, 1956

TECHNOLOGY

Chemical Rain Repellent Eliminates Wipers on Jets

➤ A CHEMICAL RAIN REPELLENT that eliminates mechanical windshield wipers was demonstrated to the American Chemical Society meeting in Dallas, Tex.

Designed for high-speed jet aircraft, the repellent is made of silicones and a combination of natural and synthetic waxes. The coating is aplied to the windshield in two steps that take about 15 minutes. It will last for several days of heavy rain, after which the windshield is recoated.

Although primarily designed for military aircraft, the repellent has commercial value and will be used soon by United Air Lines.

The chemical rain protector sets up a hard coating on the window pane that makes rain roll off like heavy beads of mercury.

It is not adaptable for automobiles, because of the slow speed of cars, but may have further application to eliminating salt spray encrustation on speed boats.

The repellent is the result of four years of research by chemists of Foster D. Snell, Inc., New York, for the Navy Department's Bureau of Aeronautics.

Science News Letter, April 28, 1956

ICHTHYOLOGY

Gobius Fish Is A Real Swell

➤ A *GOBIUS BIBARBATUS* fish that can swell up so much its scales slide apart was recently discovered in South Africa.

Other fish expand when an enemy approaches, but this is the first discovered that threatens to split its sides in the process.

The abiliy to swell is a primitive but effective defense for fish world, since it makes the fish too big to be swallowed.

The South African find is the first *Gobius* known to expand, J. L. B. Smith of Rhodes University, Grahamstown, South Africa, reports in *Nature* (April 14).

Science News Letter, April 28, 1956

IN SCIEN

PUBLIC HEALTH

Smog Chemicals Cause Lung Cancer in Mice

➤ CHEMICALS found in smog have for the first time been successfully used to induce lung cancer in mice breathing air containing the chemicals.

The experiments by Drs. Paul Kotin and Hans L. Falk of the University of Southern California and Los Angeles County Hospital were announced by the American Cancer Society which, with the U. S. Public Health Service, supported the research.

The findings, the cancer society points out, "tend to broaden considerably science's search for environmental factors responsible for the steady rise in cancer morbidity (sickness) and mortality rates. The findings suggest that precautions be taken against unnecessary exposure to the chemicals."

The compounds are oxidation products of aliphatic hydrocarbons. The molecules are built upon a skeleton of carbon and hydrogen atoms in a straight chain, a branched chain or a cycle. Their sources include gasoline, diesel oil and most plastics.

The type of cancer induced in the mice who breathed the chemicals attacks human lungs but is not the type of lung cancer that has been rapidly increasing recently.

Dr. Kotin thinks that, in humans, atmospheric irritants interfere with or exhaust the mechanisms that normally clear the lungs of foreign material. Cancer-producing chemicals may then localize and accumulate in the lungs.

Science News Letter, April 28, 1956

ARCHAEOLOGY

Egypt's Pharaohs Have Modern Parallels

➤ THE SUPERHUMAN deeds attributed to Pharaohs in the "records" of ancient Egypt have their parallels in America today, Dr. John A. Wilson, egyptologist of the University of Chicago, pointed out at the American Philosophical Society meeting in Philadelphia.

Americans, too, can pass over prosaic fact in favor of the myth that glorifies, he said. It shows up in the tall tales of Paul Bunyan, Davy Crockett and other myths of the American frontier.

The art of ancient Egypt is analogous to the Pharaoh myths. The art shows that the "portrait" of an individual Egyptian was present, but it was overlaid with an idealization of ever youthful vigor.

To the Egyptian, the belief in man's immortality was more important than slavish fidelity of characterization.

Science News Letter, April 28, 1956

CE FIELDS

GERONTOLOGY

Age Cuts Down Lung's Air Capacity

➤ WHY OLDSTERS and even middle-aged men and women get winded easily was explained by Drs. Arthur H. Norris, Nathan W. Shock, Milton Landowne and Joseph A. Falzone Jr. of the National Heart Institute's section on gerontology in Baltimore at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

With aging, these scientists found, more of the lung capacity is given over to fixed immovable air and less to mobile air that can be inhaled and exhaled. This is the aging change chiefly responsible for decline in breathing capacity up to age 50.

After age 50, the decline is due more to slow-down in the maximum breathing rate.

Science News Letter, April 28, 1956

BIOCHEMISTRY

See Cancer Weapons In Two Chemicals

➤ CHEMICAL WARFARE against cancer is advanced by two new chemicals, which have been tried in animals, and one in a few human cases.

One is a counterfeit of a protein-building amino acid called TA, short for B-3-thienylalanine. It was synthesized by Dr. Karl Dittmer of Florida State University.

Drs. Edgar C. Bristow 3rd and Robert W. Wissler of the University of Chicago and the Argonne Cancer Research Hospital, Chicago, find it a "gentle drug," which can be taken by mouth and which slows down the growth of transplanted rat tumors.

A widely used flavoring agent, monosodium glutamate, and a very poisonous, flammable and explosive gas, diazomethane, have been used to synthesize the other hopeful chemical against cancer, called D.O.N.

D.O.N. is short for 6-diazo-5-oxo-L-norleucine. Scientists at Sloan Kettering Institute for Cancer Research, New York, found it "30 times more effective in the control of tumors in mice than is azaserine." Azaserine is an antibiotic, or so-called mold remedy, tried earlier as an anti-cancer remedy in experiments by the Sloan-Kettering group.

D.O.N. was synthesized by scientists at the Mellon Institute, Pittsburgh, and at Parke, Davis and Company, Detroit, and was also produced by fermentation methods by scientists at the Detroit firm. It was reported at the meeting of the American Chemical Society in Dallas.

"The basis for hope that D.O.N. may prove useful in the treatment of some types of tumors lies in the finding that, as well as inhibiting the mouse tumor, the product has been found to inhibit a fundamental biochemical process, the formation of nucleic acids from smaller chemical fragments," scientists reporting D.O.N. said.

The Sloan-Kettering scientists are Drs. Donald A. Clarke, H. Christine Reilly and C. Chester Stock. Synthetic work at Mellon Institute was done by Horace A. Dewald and Alexander M. Moore. Eighteen Parke, Davis scientists aided in the research.

Science News Letter, April 28, 1956

BIOCHEMISTRY

Leukemia Virus Find May Yield Mouse Vaccine

➤ DISCOVERY of a virus that for the first time consistently causes leukemia in adult as well as infant mice was reported by Dr. Charlotte Friend of Sloan-Kettering Institute for Cancer Research, New York, at the meeting of the American Association for Cancer Research in Atlantic City, N. J.

The finding will make it possible to study immunization against the disease by vaccination of animals with the virus.

The discovery pertains only to mice, Dr. Friend cautioned, and does not indicate that human leukemia is a virus disease. Being able to study the physical and chemical characteristics of leukemia in animals, the expected first result of the finding, may, however, lead to better knowledge for fighting human leukemia.

Science News Letter, April 28, 1956

BIOCHEMISTRY

Chemistry of Vision Little Changed by Time

➤ THE CHEMISTRY OF VISION has changed little or not at all down through the ages, from ancient creatures to man.

Dr. Frederick Crescitelli, University of California at Los Angeles zoologist, has identified rhodopsin, man's visual purple pigment related to vitamin A-1, as the primary visual pigment of the lamprey, one of the most primitive living vertebrates.

The lamprey is a link between invertebrates and higher vertebrates, including frogs and man. Porphyropsin, related to vitamin A-2, had previously been thought to be the lamprey's primary visual pigment.

This discovery seems to clarify the evolution of the chemistry of vision. Vitamin A-1 is a constituent of invertebrates and is probably related to their visual pigments, Dr. Crescitelli said. The supposition that the lamprey's primary visual pigment was porphyropsin had indicated a biochemical break between invertebrates and vertebrates.

Dr. Crescitelli's research suggests that rhodopsin is the original vertebrate visual pigment; that there is no biochemical break between invertebrates and vertebrates but a direct line, and that porphyropsin, found in fresh water fish, is probably an offshoot from the main evolutionary line.

Science News Letter, April 28, 1956

PSYCHOLOGY

Successful Air Force Pilots Are Well Liked

➤ THE SUCCESSFUL Air Force pilot turns out to be a well-rounded "good Joe," two Air Force scientists told the Aero Medical Association meeting in Chicago.

Studies of combat and training data show the successful combat pilot is courageous, fair with others, willing to accept his share of combat duty, responsible, a disciplinarian when needed, and well adjusted.

"Above all, he is liked by all who come into contact with him," Drs. David K. Trites and Albert L. Kubala of the USAF School of Aviation Medicine at Randolph Air Force Base, Texas, said.

The successful pilot, they reported, is also usually the more competent pilot and is more easily trained and is "not unduly concerned with self-advancement."

Science News Letter, April 28, 1956

BIOCHEMISTRY

Isolate Contraction Chemical From Muscle

➤ A CHEMICAL muscles must have to contract when they work has for the first time been isolated and crystallized from muscle tissue.

It is called myokinase, and its isolation was announced by Lafayette H. Noda and Stephen A. Kuby of the University of Wisconsin at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

Existence of myokinase has been known since 1943. It is an enzyme chemical that helps make energy available to the muscles for work, acting on chemicals in which the energy is stored.

Science News Letter, April 28, 1956

MAMMALOGY

Cat Lives to Older Age Than Other Pets

➤ CATS with their fabled "nine lives" do have the longest life span of popular household pets, reports British zoologist Alex Comfort of the University College, London.

Surveying authentic cases of old age in cats, Mr. Comfort found that "the cat would appear to be quite the longest-lived of the smaller domestic animals, its maximum age just under 30 years." This compares with 18 to 20 years reported for terriers and 15 to 18 years for large hybrid rabbits.

Old cats are strikingly better preserved than dogs in terms of persistence of teeth, activity, hunting and grooming, Mr. Comfort states. The oldest female in his records, 31 years old, was said to have been "in kitten" at 26. Mating continues throughout life with some of our oldest male cats, Mr. Comfort reports in the *Journal of Mammalogy* (Feb.).

Science News Letter, April 28, 1956

ENTOMOLOGY

The Insect War

Insects throughout the world have shown an alarming ability to build up resistance in insecticides. So far scientists have developed chemicals faster than insects adapt to them.

By HENRY W. PIERCE

➤ A WORLD-WIDE armaments race is under way between chemists and insects. The chemists develop new insecticides, but the insects create their own special defenses against these insecticides within two to three years.

Latest insect victory is one scored by the housefly in the battle against phosphate insecticides, reported losing their efficiency in the United States and Denmark.

Cotton and cabbage pests have been adapting to a variety of insect-killers, and cockroaches in southern Texas are able to survive formerly deadly chlordane.

One of the most widely publicized insecticides has been DDT. Soon after its introduction in this country, DDT did a job that doctors and sanitation experts thought unbelievable. The insecticide quickly arrested a typhus epidemic in Naples, Italy, by killing its carriers, body lice. Yet DDT proved ineffective against body lice in Korea at the start of the Korean War.

Body lice in Egypt are now building an immunity to DDT, and the chemical is losing its potency against bedbugs. Houseflies mastered it some time ago, and malaria mosquitoes are proving that they, too, catch on to new things.

Resistance Not Believed at First

When insects first began building defenses against DDT, scientists and insecticide manufacturers alike blamed the chemical's failures on local conditions. The insecticide was not being applied properly, or perhaps some insecticide other than DDT was mistakenly being used, the experts said.

Since then, however, the ability of an insect to build up resistance has been definitely proved. Entomologists at the U. S. Agricultural Research Service in Beltsville, Md., have developed a breed of housefly that can live in a tube lined with DDT.

The scientists have done this by exposing successive generations of flies to increasing amounts of the chemical. Only those insects in each generation that can tolerate DDT survive to produce offspring.

Entomologists agree that insects' capacity to adapt to chemical killers is the gravest problem facing insect control specialists today. Virtually every large university in the United States is seeking a solution. Chemical companies in this country and abroad are giving a major share of time and money to the development of anti-insect weapons. The U. S. Army has been spending an average of more than $200,000 a year on the study of insect physiology alone.

Insect experts are frankly pessimistic over the possibility of developing a permanently effective exterminator. Each new chemical kills the great majority of susceptible insects, but there are always a few that, because of some physiological peculiarity, can survive. These remaining insects multiply and pass on their tolerance to their offspring. Soon the entire species is able to ward off chemical attacks.

So far the only solution scientists have found is that of trying to develop new insecticides faster than insects can adjust to them. Atomic energy is playing a vital role in this research by permitting scentists to trace, with radioactive isotopes, the biological changes that affect insecticides within their intended victims.

DDT-RESISTANT FLIES — These houseflies are quite at home in a DDT-lined tube. They are the offspring of DDT-resistant strains bred by entomologists at the U. S. Department of Agriculture research station, Beltsville, Md.

Atomic energy also promises to play an important part in sterilizing male insects. In 1954, three Department of Agriculture scientists rid an entire island in the Caribbean of a destructive cattle pest with this method.

Drs. R. C. Bushland, A. W. Lindquist and E. F. Knipling, found that atomic radiation can cause sterility in the pupae of male screw-worm flies without inhibiting their growth and vigor.

Since female screw-worm flies mate only once, a large number of sterile males could, they reasoned, bring about the extinction of the screw-worm in a localized area. No offspring would be produced.

The scientists released a large number of sterile male screw-worm flies on the Dutch Island of Curacao in the Caribbean. Each time a female fly mated with a sterile male, unfertile eggs resulted. The one-time mating females did not produce enough offspring to enable the screw-worm to survive on Curacao.

Insect repellents, which drive the pests away without killing them, have been widely used against mosquitoes. For the first time, entomologists are seeking to develop a non-poisonous chemical to repel cockroaches. So far as is known, insects do not develop a tolerance to repellents.

Although the usual goal of cockroach control is extermination, scientists believe a repellent might be useful in view of the insect's increasing ability to adapt to insecticides.

"Counterfeit" DDT

Another development still in the experimental stage is "counterfeit" DDT. This is a chemical group, structurally similar to DDT, which kills DDT-resistant flies when added to the insecticide. The chemical group, called the diaryl-(trifluoromethyl)-carbinols, is not effective unless added to DDT.

Insect resistance to chemical killers was first noted in 1914 in California. California scale insects, ordinarily controlled with hydrocyanic acid, unaccountably began surviving the lethal poison. The only explanation lay in the possibility that they were somehow developing their own defense mechanism to deal with the acid.

Scattered reports of similar cases appeared between then and 1942, when DDT came into general use in the United States. DDT was the first insecticide that would continue to kill long after it had been applied, so this was the first opportunity insects had to build up resistance to chemical exterminators.

Perhaps the biggest contribution DDT has made to human health has been in the fight against malaria and yellow fever mosquitoes.

Before World War II, the disease-carrying insects could only be exterminated with calcium arsenate applied in conjunction with expensive drainage programs. Besides being time-consuming and costly, the task often was opposed by conserva-

tionists who shuddered at the loss of wildlife incidental to draining swamps.

DDT changed this. Where calcium arsenate had been used at the rate of a half pound an acre, less than one-tenth of a pound of DDT was required. And DDT was not as expensive as calcium arsenate.

Here, for the first time, was an effective insecticide cheap enough for large-scale use against mosquitoes. Much of the progress that has been made in the fight against yellow fever and malaria since 1942 can be directly traced to DDT.

Now, however, malaria mosquitoes are showing the first signs of resistance to DDT. Florida salt marsh mosquitoes, which do not carry disease, have already become indifferent to the chemical's effects.

If the malaria and yellow fever carriers follow the salt marsh mosquito's lead, it may again become necessary to rely solely on swamp drainage and insecticides.

Insecticides now being developed will not be on the market for three to four years. After chemists have synthesized the new products, they must be tested by entomologists.

The testing is done on a small scale first. If the insecticide proves successful, further tests are performed on more insects over a larger area. If the scientists are satisfied that the chemical is truly effective, plans are made for its manufacture.

What insecticides are effective today?

DDT is still effective against mosquitoes, although how long it will remain so is a matter for conjecture.

Lindane is used against body lice and agricultural insect pests generally. Its chief disadvantage is its high cost. The chemical is not effective against spider mites.

Parathione is used on farm crops, but it is highly poisonous and presents a constant threat to farm animals.

Pyrethrins are the old standard knockdown making up a major part of the fluid in your own spray gun. Pyrethrins are not good killers, but will knock flies out of the air fast. They are usually mixed with another chemical which kills insects after they have been brought to the floor.

Malathione is widely used because it will kill almost any variety of insect. It is especially effective against cockroaches. It has a bad smell, however, and must be re-applied every few weeks to insure lasting effects.

Science News Letter, April 28, 1956

NUTRITION

Too Much Iron Can Be Dangerous

➤ TOO MUCH IRON in your system can be dangerous, although most people, when they think of iron, worry about being anemic from insufficient amounts, the Federation of American Societies for Experimental Biology meeting in Atlantic City was told.

This danger of too much iron was cited as a possible human health hazard from a new chemical in bread and other foods in a report by Dr. Robert W. Wissler and associates of the University of Chicago. Their report was based on feeding studies with hamsters conducted at the University's Argonne Cancer Research Hospital.

Chemically, the food additive that is dangerous if eaten in too great amounts is polyethylene sorbitan monolaurate. It is used in emulsifying food and keeping bread from going stale.

The reason too much iron is dangerous is that, once absorbed into the body, it is difficult to eliminate. Cirrhosis of the liver, diabetes, and pancreas damage, which causes the skin to turn brown, are results of excess iron.

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PHYSICS

Total Radioactive Fallout

➤ THE TOTAL RADIOACTIVE FALLOUT from all atomic and hydrogen bomb tests so far conducted probably will produce in the nation's capital only a fraction of the lifetime dose due to natural and cosmic radiation, two scientists report.

Although their calculations were made only for Washington, the results would be about the same for other places in the Northern Hemisphere not too close to the explosion points, they report in *Science* (April 13).

About 60% of the lifetime total of radioactive dosage in Washington results from fallout from the Nevada tests, about 33% from Soviet tests and only about seven percent from Pacific tests, Drs. Irving H. Blifford Jr. and Herbert B. Rosenstock of the U. S. Naval Research Laboratory calculated.

The low contribution of Pacific tests, although "surprising" because the total energy released and the resulting fission debris "far exceeded the combined total of all other tests," shows that fallout is much more dependent on distance than on energy release.

All fusion and fission weapons explosions between January, 1951, and May, 1955, will give a lifetime fallout dose at Washington of less than one-fifth of a roentgen, the international standard of X-ray quantity.

These results, they report, are in agreement with other measurements previously made for various locations in the United States and in England. They are based on measurements of ground-level concentration of fission products in the air in Washington for several years, which are usually "less than the natural background."

The two scientists calculated the dosage received by an unshielded man for all "biologically significant" time. Fission products contained in the part of the mushroom cloud from H-bomb explosions that extends above 40,000 feet, the top level at which rain clouds form, were found to contribute only slightly to dosage at great distances.

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ENTOMOLOGY

Cotton Gin Kills Plant Insect Pests

➤ THE COTTON GIN is going to become an important insect killer on American cotton farms, saving growers a total of $1,500,000 a year.

Putting cotton through a gin kills pink bollworms in the seed, making heat sterilization unnecessary, research by the U. S. Department of Agriculture indicates.

The pink bollworm is a serious threat to the American cotton industry. The process of ginning, which includes drying, cleaning, extracting, and moving seed cotton and cotton seed pneumatically through gins, has been shown to kill from 90% to 100% of the insects in the cotton seed.

The gin's newly discovered function may mean modifying present Federal and state quarantine regulations. Texas, New Mexico, Arizona, Oklahoma, Louisiana and Arkansas will be most affected.

Science News Letter, April 28, 1956

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ASTM STANDARDS ON TEXTILE MATERIALS (WITH RELATED INFORMATION): Specifications, Tolerances, Methods of Testing, Definitions and Terms — ASTM Committee D-13 — *American Society for Testing Materials*, 761 p., illus., paper, $5.75. Of the 118 standards and tentatives, 22 are new or revised since the previous edition.

THE AMERICANA ANNUAL 1956: An Encyclopedia of the Events of 1955—Lavinia P. Dudley and John J. Smith, Eds.—*Americana Corp.*, 866 p., illus., $12.00. Topics are arranged in alphabetical order.

BACTERIAL ANATOMY: Papers to be discussed at Sixth Symposium of the Society for General Microbiology—E. T. C. Spooner and B. A. D. Stocker, Eds.—*Cambridge University Press*, 360 p., illus., $6.00. Of interest to zoologists, botanists and anyone concerned with the relationship between bacteria and other living things.

BRYOZOA OF THE UNITED STATES NAVY'S 1947-1948 ANTARCTIC EXPEDITION, I-IV—Mary D. Rogick—*Smithsonian*, 97 p., 35 plates, paper, free upon request direct to publisher, Washington 25, D. C.

COLOR ATLAS OF ORAL PATHOLOGY—U. S. Naval Dental School—*Lippincott*, 188 p., illus. in color, $12.00. A book of pictures with supplementary text presenting fundamental facts in concise form.

CURRENT ANTHROPOLOGY: A Supplement to Anthropology Today—William L. Thomas Jr., Ed.—*University of Chicago Press*, 377 p., cloth $5.00, paper $3.50. Nineteen contributed articles cover both new discoveries and theories developed by leaders in the field.

DEVELOPMENT, GROWTH, AND STATE OF THE ATOMIC ENERGY INDUSTRY: Part 1—Hearings before the Joint Committee on Atomic Energy, Congress of the United States—*Govt. Printing Office*, 320 p., illus., paper, 75 cents.

AN ENCYCLOPEDIA OF THE CHEMICAL PROCESS INDUSTRIES—Jeffrey R. Stewart—*Chemical Publishing Co.*, 820 p., $12.00 plus postage. A reference book on practical aspects of the chemical process industries, together with definitions of frequently encountered scientific and technical terms.

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EVERY OTHER BED—Mike Gorman—*World Publishing Co.*, 318 p., $4.00. The executive director of the National Mental Health Committee tells what is happening to the mentally ill who fill "every other bed" in the nation's hospitals.

EXPANDING UNIVERSES—Erwin Schrodinger—*Cambridge University Press*, 93 p., illus., $3.50. A brief course of lectures delivered to an advanced seminar group.

THE FIRST BOOK OF CAVES—Elizabeth Hamilton—*Franklin Watts*, 63 p., illus., $1.95. Describing for children some of the wonders to be found in caves.

GENETICS: The Modern Science of Heredity—Edward O. Dodson—*Saunders*, 329 p., illus., $6.50. Based on a course first given at the Dominican College, San Rafael, Calif., and later developed at Notre Dame.

GYPSUM IN KANSAS—Robert O. Kulstad, Paul Fairchild and Duncan McGregor—*University of Kansas*, State Geological Survey Bulletin 113, 110 p., illus., paper, 25 cents. Deposits are relatively extensive in Kansas and there is a growing demand for products made from it.

THE LARVAL TROMBICULID MITES OF CALIFORNIA (ACARINA: TROMBICULIDAE)—Douglas J. Gould—*University of California Press*, Publications in Entomology Vol. 11, No. 1, 115 p., illus., paper, $2.00. You may know these creatures better under the name of chiggers.

THE LAWS OF NATURE—R. E. Peierls—*Scribner's*, 284 p., illus., $4.50. Presenting the principles of modern physics in simple language and without assuming any previous knowledge of this field.

LIFE, THE GREAT ADVENTURE—Jean Rostand and Paul Bodin, foreword by Marston Bates—*Scribner's*, 228 p., $3.50. A dialogue between a writer, also a scientist, who asks questions, and another writer, philosopher and scientist, who answers them.

METROPOLITAN GROWTH AND THE CONVERSION OF LAND TO NONAGRICULTURAL USES—Donald J. Bogue—*Scripps Foundation for Research in Population Problems* and *Population Research and Training Center*, 33 p., illus., paper, 60 cents. At present the fringes of metropolitan areas are being settled by persons from all social strata.

MODERN CHEMICAL PROCESSES: A Series of Articles Describing Chemical Manufacturing Plants, Volume IV—Editors of Industrial and Engineering Chemistry—*Reinhold*, 202 p., illus., $5.00. Bringing to 88 the number of detailed descriptions of operating plants in the chemical process industries.

NEW CONCEPTS IN FLOWERING-PLANT TAXONOMY—J. Heslop-Harrison with a foreword by W. B. Turrill—*Harvard University Press*, 135 p., illus., $1.25. Summarizing results of a great deal of modern research in the border areas of taxonomy, ecology and cytogenetics.

OUR SENSES AND HOW THEY WORK—Herbert S. Zim—*Morrow*, 64 p., illus., $2.00. Interesting facts for children about the senses in man and also in lower animals.

POLICE DRUGS—Jean Rolin, translated with a foreword by Laurence J. Bendit—*Philosophical Library*, 194 p., $4.75. Discussing the use in police work of various types of "truth serum" and other drugs.

THE PREVENTION OF CRUELTY TO CHILDREN—Leslie George Housden—*Philosophical Library*, 406 p., $7.50. Describing the sad lot of neglected and abused children in the past and present, and anticipating better days in the future.

THE SEARCH WITHIN: The Inner Experiences of a Psychoanalyst—From the Works of Theodor Reik—*Farrar, Straus and Cudahy*, 657 p., $7.50. Among the selections is an account of the author's 30 years with Freud.

THE SEXUAL RESPONSIBILITY OF WOMAN—Maxine Davis—*Dial*, 299 p., $4.00. Telling women how to get the greatest joy out of marriage from the honeymoon to the later years. The author is a medical writer of books and magazine articles.

STATISTICS: A New Approach—W. Allen Wallis and Harry V. Roberts—*Free Press*, 646 p., illus., $6.00. An attempt to bring liveliness into an ordinarily dull study.

STRESS, FIFTH ANNUAL REPORT 1955-56—Hans Selye and Gunnar Heuser, Eds.—*MD Publications*, 815 p., illus., $20.00. A new volume of this important reference work.

SURVIVAL IN THE SKY—Charles Coombs—*Morrow*, 256 p., illus., $3.75. Describing some of the stressful conditions faced by the pilot of the new high-speed, high-altitude airplanes, and the equipment intended to protect him.

VERTICAL SAND DRAINS FOR STABILIZATION OF EMBANKMENTS—Ray Webber and others—*Highway Research Board*, Bulletin 115, 52 p., illus., paper, 90 cents.

Science News Letter, April 28, 1956

WILDLIFE

Family Fish Ponds Gaining Popularity

➤ FAMILY-SIZED FISH ponds are gaining in popularity in the United States. Fish and Wildlife Service records show family fish ponds are found in 42 states.

Federal and state governments have encouraged private construction of fish ponds to relieve pressure on natural fishing areas. Last year the Fish and Wildlife Service provided more than 30,000,000 fish for approximately 28,000 non-commercial ponds.

The Federal Government and many states furnish the necessary fish for stocking, plus information on the management and development of ponds.

Fish and Wildlife Service reports show a one-acre pond can yield up to 200 pounds of fish a year. This, Fish and Wildlife authorities say, means 400 hours of good fishing.

Ponds of one to three acres make ideal fishing for an average family. Larger ponds cost more and require more management.

For best results, a small pond should be stocked only with hatchery fish of the kinds, sizes and numbers recommended by state or Federal biologists. Freely putting in wild fish will reduce the number and size of fish caught.

Ponds larger than three acres may give better results if opened to the public, since heavy fishing at the right time usually improves the sport.

Science News Letter, April 28, 1956

TECHNOLOGY

Room Built for Studying Intense Noise Problems

See Front Cover

➤ THE ROOM shown on the cover of this week's SCIENCE NEWS LETTER was built at Indiana University for research on problems associated with intense noise.

The walls and floor, made of extra hard and smooth concrete, are set at grotesque angles so that sounds bounce around in all directions, helping to set up rackets similar to those on aircraft carrier flight decks.

Scientists of the University's Hearing and Communications Laboratory are working on problems of speech and hearing in noisy situations, such as those associated with jet aircraft and some industries. Shown in the picture are the laboratory's director, James P. Egan, standing, and research associate Frank Clarke, operating the sound analyzing apparatus.

The research is partly financed by the U. S. Air Force and the Allison Division of General Motors Corp.

One danger to workers around jet aircraft is possible deafness, since the ear can take only so much punishment from intense noise without being deafened. The scientists will try to determine the safe limits of exposure to intense noise.

The ear gradually recovers from the condition known as auditory fatigue, or temporary deafness, but this state can readily break over the borderline into permanent deafness.

Science News Letter, April 28, 1956

ENTOMOLOGY

Smithsonian Given Termite Collection

➤ MORE THAN 200,000 TERMITES under glass at the Smithsonian Institution are helping to guard the United States against large scale invasions from foreign species of the pest.

The collection, recently presented to the Smithsonian by the U. S. Department of Agriculture, will provide immediate identification of any foreign termites.

The 230,000 specimens were collected over a period of 41 years by Dr. Thomas E. Snyder, retired Department of Agriculture entomologist. Dr. Snyder reports that termites are found over most of the world outside the polar regions and that many kinds are probably still unknown. There is always the danger, he says, that some foreign species may invade the country and, therefore, a means of immediate identification may prove invaluable.

The collection includes 1,286 distinct species of the approximately 2,000 known in the world. When Dr. Snyder started the project in 1915, the Smithsonian had only 12 identified species.

Contrary to popular belief, termites are more closely related to roaches than to ants.

Science News Letter, April 28, 1956

PHYSIOLOGY

Study Problem of Vision

➤ GOOD "DRIVING EYES" do not necessarily depend upon ability to read the bottom line on an eye chart.

A subject's visual effectiveness with a static target, a previous Air Force study indicated, did not necessarily carry over to moving targets. The study was aimed at finding better means of selecting personnel for aerial searches for survivors at sea.

At the University of California at Los Angeles's Institute of Transportation and Traffic Engineering, the relationship of visual factors to moving objects is being investigated.

Test patterns are projected from a revolving slide projector onto a curved "Cinerama-type" screen. Subjects are asked to describe various details of the patterns as they move across the screen.

Experiments are made with the subject's head held stationary and eyes free to move, with the eyes stationary and the head moving, and with both head and eyes free.

Driving a car primarily involves visual relationships between moving objects, the scientists state. Standard eye chart tests, which involve only a static situation, may not reveal other visual factors in driving. The research is designed to establish what these factors are and devise means of detecting driver weaknesses not brought out in present visual tests.

It is conducted by Slade Hulbert and Albert Burg under the direction of J. H. Mathewson. Dr. Henry Knoll serves as a consultant, and David McClinton designed experimental equipment.

Science News Letter, April 28, 1956

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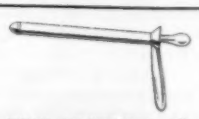

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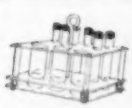

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PHYSIOLOGY

Eye Movements Tell What Dreams Are About

➤ IF YOUR EYES move up and down while you are asleep, you are dreaming about climbing. If they move from side to side, your dreams are about watching activities on a horizontal plane.

Electrodes attached to the eyelids of sleepers plus interviews when they awakened show this, Drs. William Dement and Nathaniel Kleitman of the University of Chicago reported at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

The average person spends about two hours a night in dreaming. But, however long the dream, he may not be able to recall it when he awakens. If he wakes up within five minutes, he can recall much of the dream, less if he wakes up 15 minutes after dreaming.

Contrary to older ideas that dreams took place almost instantaneously, the Chicago scientists found a single dream can last as long as an hour.

Science News Letter, April 28, 1956

MEDICINE

Pain After Beer May Be Disease Symptom

➤ PAIN after a few swallows of beer, a highball or other alcoholic beverage may be a sign of Hodgkin's disease, Drs. John O. Godden, O. Theron Clagett and Howard A. Andersen of the Mayo Clinic and Foundation, Rochester, Minn., report in the *Journal of the American Medical Association* (April 14).

Even the amount of alcohol in a sherry wine gelatin dessert has been known to bring on this pain.

Hodgkin's disease is normally a painless but progressive enlargement of the lymph nodes, spleen and general lymphoid tissue. Why alcohol should bring on pain in the affected tissues is not known. The fact that it does, however, may lead to diagnosis of the disease when it has otherwise been suspected but not proved.

Alcohol pain is also a test for detecting recurrences of the disease among treated patients.

Science News Letter, April 28, 1956

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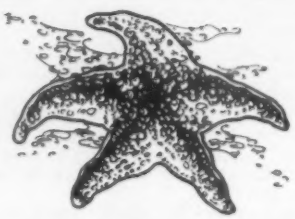
MARINE BIOLOGY

NATURE RAMBLINGS by Horace Loftin



The Many-Sided Starfish

➤ FROM THE SHAPELESS MASS of a sponge colony to the sleek lines of the tuna, inhabitants of the ocean display an almost endless variety of body forms.

Each large group of marine creatures exhibits its own peculiar set of body structures, gained in the experiments of nature to find the best means of survival for animal life under different conditions. Among the members of these larger groups, different families, genera and species may show great differences one from the other.

The starfish, with its familiar star-like form, illustrates how diverse in shape an animal group can become through the process of evolution. In the first place, the general starfish pattern of radiating arms that contain many of the animal's vital organs is unique. Then the variation within the group itself is striking.

How many arms does the starfish have? Well, as you might have supposed, five is the number typical of most species. But among the 1,000 or more species known to science, there are those with from four to 25 arms.

Generally, the arms of a starfish are more or less flattened, but in some species they are almost like round tubes. In some, the arms are long, and the central portion of the starfish appears to be only a point of union for them. But in others, the arms are almost completely joined together along their length, so that their existence can only be told by slight angles found at the outer edges of the starfish. Between these two extremes, many variations in arm length can be found.

Although the starfish is a pleasing, harmless creature to most of us, to the oysterman he is a serious and costly pest. By wrapping himself around an oyster and exerting tremendous pressure with his arms, a starfish can eventually force open the shell. When the oyster opens up, the starfish inverts his stomach through the crack and digests the oyster while it is still in its shell.

Formerly it was thought that the starfish was merely able to outwait an oyster, applying constant pressure with some of his arms, then switching to others as these tired. But when it was shown that the starfish usually wins his battle long before the oyster should be expected to open, then a theory was advanced that the starfish secretes a type of anesthetic to weaken his prey.

More recently, experiments indicate that starfish can exert steady pressures great enough in themselves to open oysters in fairly short order.

Science News Letter, April 28, 1956

BIOCHEMISTRY

Radiation Antidote

➤ A POSSIBLE ANTIDOTE to atomic radiation injury may exist in a soy bean chemical, Dr. Clarence C. Lushbaugh, Miss Lora B. Hughes and Miss Dorothy B. Hale of University of California's Los Alamos Scientific Laboratory, N. Mex., reported at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

The chemical is known as a trypsin inhibitor and is available commercially.

Its possibility as a remedy for any persons exposed to atomic radiation was suggested by finding that it gave "some apparent protection" to laboratory mice when injected after the mice had been exposed to radiation.

Injecting trypsin itself into laboratory mice before irradiation more than doubled the survival rate of animals exposed to 600 roentgens. A chest X-ray, the scientists said, usually amounts to about one-tenth of a roentgen.

The injections of trypsin, which is an enzyme chemical that destroys protein, caused a natural build-up of the trypsin inhibitor substance that normally is present in the blood stream of animals and man.

Trypsin or a trypsin-like enzyme in the blood helps to dissolve dead and broken cells of the body and invading bacteria. It is kept from dissolving the living tissues themselves by the trypsin inhibitor.

Radiation, the Los Alamos scientists found, destroys the trypsin inhibitor. This lets the cell-dissolving enzyme "run wild," resulting in destruction of healthy living cells.

The experiments, Dr. Lushbaugh said, have led his research team to suppose that one way in which radiation causes death of a cell or an animal is by increasing the rate of purposeless digestion of cell proteins so that the vital functions of various tissues can no longer be carried out, while cell-building processes are slowed down or stopped by the same radiation.

Science News Letter, April 28, 1956

CHEMISTRY

Blood Clotting Process

➤ POLYSOAP, a new kind of chemical in which soap-making molecules are combined with substances similar to polymerized plastics, has been produced at Rutgers, the State University of New Jersey.

The large molecules formed by this combination may throw light on the way blood clots form.

Combined from two kinds of chemicals with opposite properties, one part of the polysoap material can combine with water, the other part with oil. Polysoap dissolves in water but forms tiny isolated communities within the solution.

Such communities may enclose drops of oil, fat or other substance not ordinarily dissolved in water, and thus aid mixing of the unlike substances. The isolated communities are called micelles.

The process of micelle formation came into prominence during World War II when it was learned that it is of critical importance in making synthetic rubber.

In polysoap, as announced by Dr. Ulrich P. Strauss, Rutgers chemist, detergent molecules are tied to long-chain molecules in such a way that micelles are permanently formed. The material lends itself to the study of tightly coiled molecular structures, such as are found in proteins and in clotted blood.

Like a circle of swimmers in a water carnival, the molecules of a micelle, if they could be magnified enough to be seen, would show a circle of heads surrounding an area of definite size in the water. The feet of the swimmers would all point toward the center of the circle.

In an ordinary soap micelle such a circle would remain in the same form, but individual swimmers would dive out of it from time to time. Their places would be taken by individuals from other parts of the pool. Polysoap differs from this structure in that the same individuals keep their places and cling to a surrounding rope. Each connected group thus becomes a unit.

Dr. Strauss, associate professor of chemistry, has carried on research at Rutgers since 1948 under the auspices of the Research Corporation and, since 1951, under the Office of Naval Research. He plans to use the new compounds to advance understanding of complicated processes of life chemistry.

Science News Letter, April 28, 1956

MEDICINE

"See" Through Skin

➤ HOW A BLIND BOY, with eyes scarcely developed, was trained to "see" through his skin has been described by Dr. Karl Konig, superintendent of the Camphill Rudolph Steiner Schools, near Aberdeen, Scotland.

When the child, aged four, arrived at the schools, he was regarded as uneducable. He was able to talk only in parrot fashion and was frail, thin and exceedingly shy.

To teach him to see, he was given color-baths. He was placed on a couch surrounded by a screen of white sheets. Colored light was thrown on the white screen and the child was bathed in colors. One color was used for three to five minutes, and then, after an interval of darkness, another was switched on to him.

"It was astonishing to see how the power of sight unfolded," Dr. Konig reported. "The child developed a certainty of movement which gradually made him independent, whereas before he had been full of fear and anxiety.

"He learned to speak properly, to sing little songs and recite poems with full understanding. Through the color-bath, the whole texture of his skin has entirely changed. Whereas formerly it was pale and almost transparent, it is now a living organ, full of color and strength, and the child himself has become a sturdy, healthy boy."

Dr. Konig is now sure that a blind child has great possibilities of unfolding his power of seeing, that is, of perceiving an impression of light and color, by means of its skin, particularly the parts on the forehead and cheeks.

He describes another case of a deaf and blind child. In a darkened room, beams of colored light were thrown on the eyes. Then a lighted candle was placed between the child and a teacher. Soon the child was repeating exactly the same gestures as those made by the teacher.

This child's eyes now "have a vivid expression of personality." He can pick up things from the floor which he "sees" at a distance of two or three yards.

Science News Letter, April 28, 1956

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Questions

GERONTOLOGY—In what way does age affect the air capacity of lungs? p. 265.

□ □ □

ICHTHYOLOGY—How does a recently discovered Gobius fish protect itself from enemies? p. 264.

□ □ □

MAMMALOGY—Which popular household pet has the longest life span? p. 265.

□ □ □

NUTRITION—How can too much iron in a person's body be dangerous? p. 267.

□ □ □

PHYSIOLOGY—Where are the brain's pain and pleasure centers? p. 263.

□ □ □

VITAL STATISTICS—What are the chances of a woman's having twins? p. 258.

□ □ □

PHOTOGRAPHS: Cover, Indiana University; p. 259, Harvard University; p. 261, Cy Coleman; p. 262, Minneapolis-Honeywell Regulator Company; p. 263, British Information Services; p. 266, Fremont Davis; p. 272, Bakelite Company.

ENTOMOLOGY

Insect Soloists Now on Records

➤ FOR THOSE who enjoy hearing insects, Cornell University has recorded the voices of 40 crawling songsters.

The Songs of the Insects, released through Cornell University Records, is the ninth in a series of wildlife recordings produced by Drs. P. P. Kellogg and Arthur A. Allen of Cornell.

The insects, all natives of eastern United States, are introduced one at a time by an announcer before their renditions.

Buzzes, trills, chirps and lisps have been immortalized for entertainment as well as for serious study. The long-horned grasshopper can be heard rubbing a sharp edge of one front wing against a ridge on the under side of the other front wing. The cicada can be heard snapping the membranes at the base of his abdomen.

Insects do not have vocal cords, larynx or lungs. Most of their calls are produced by rubbing or hitting together different parts of their bodies.

Science News Letter, April 28, 1956

ROCK CHARTS

These various Rock Charts are visual aids for elementary courses in rock and mineral study. They are practical standard equipment in laboratories and libraries devoted to geology study. **ROCK CHART FOR IGNEOUS ROCKS.** Price **$8.00.** Size 14 x 22" and contains 77 of all major types of igneous rocks. With the aid of this Chart the untrained person can identify almost any igneous rock and at a glance understand its relationship to all other igneous rocks. ROCK CHART FOR SEDIMENTARY ROCKS. 14 x 22". 40 specimens, **$8.00.** ROCK CHART FOR METMORPHIC ROCKS. 14 x 22". 32 specimens. **$8.00.** ROCK CYCLE CHART. 14 x 27" **$8.00.** CHART "CHEMISTRY OF THE ROCKS." 14 x 27". **$14.00.**

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For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 828. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

PASTE SOLDER cleans, tins and solders in one operation. The tin-lead solder is combined with an active flux. It is heated with soldering irons, torch or line oven and applied. Needs only to be wiped with a damp cloth to complete the job.

Science News Letter, April 28, 1956

STOCK MARKET GAME is described as an educational parlor game for the whole family. It can be played by two to six persons. It is based on the relative values of stocks and bonds, represented by stock "certificates." The game is complete with board and play money.

Science News Letter, April 28, 1956

NAIL DRIVER that is hand-operated is designed for builders, electricians and home workshops. A British invention, it can drive plain, screwed and tapped bolts of one-quarter inch diameter and less into bricks, rendered walls, sheet metal, timber or insulation boards.

Science News Letter, April 28, 1956

BEACH SANDALS molded of polyethylene plastic are designed to fit and flex with the foot. Unbreakable, the sandals are deep-ribbed underneath, as shown in the photograph, to permit easy walking on the sand. Water-resistant, sand and dirt can easily be washed off.

Science News Letter, April 28, 1956

TINY RECORDER permits a busy businessman to have a secretary in his pocket. The miniature battery-operated tape recorder weighs three pounds and measures 1⅞ inches deep by 3⅞ inches wide by 8½ inches long. The crystal microphone is the size of a postage stamp.

Science News Letter, April 28, 1956

SEWER OPENER does the job of six men with only one operator. Mobile and simple to use, the two horsepower, four-cycle back-geared machine is designed for on-the-job threading and cleaning of storm and sanitary sewers. It features a foot-operated clutch.

Science News Letter, April 28, 1956

ASH TRAYS are self-deodorizers. A built-in chemical preparation removes the odor left by butts and ashes, whether smoldering or not. The trays are available in a variety of shapes, colors and sizes.

Science News Letter, April 28, 1956

CREAM - TYPE MEDICATION is "stingless." The result of seven years research, the antiseptic cream is described as an injection fighter, a pain reliever and a healing helper. It can be applied directly to open wounds, burns, chapping, sunburn and insect bites.

Science News Letter, April 28, 1956

YOUR INVITATION TO

The Seventh National Science Fair

As a subscriber to Science News Letter, you are cordially invited to attend the Seventh National Science Fair where more than 200 exhibits from 110 regional and state science fairs will be shown at the Municipal Auditorium, Oklahoma City, Okla.

Thursday, May 10
3:00 p.m. to 6:00 p.m.

•

Friday, May 11
9:00 a.m. to 7:00 p.m.

•

Saturday, May 12
9:00 a.m. to 4:00 p.m.

•

Finalists will be present only on Saturday from 10:45 a.m. to 12:45 p.m.

4-28-56

Do You Know?

It is estimated that 5,000,000 deaths and 100,000,000 illnesses have been prevented by use of *DDT* between 1942 and 1954.

Flies have established themselves in every part of the world inhabited by man, although found in greater numbers in tropical, subtropical and temperate areas.

The Virginia *pine sawfly*, forest insect pest, has been controlled in localized areas with a virus-disease spray.

The giant salt domes of Texas and Louisiana, along the Gulf Coast, are the major source of the world's supply of *sulfur*.

The U. S. Fish and Wildlife Service urges that anyone finding a banded bird—or bat, muskrat, seal, fish or any other banded *animal*—report it to the Fish and Wildlife Service, Washington 25, D. C.

Seven million *birds*, representing more than 600 species, have been banded in North America since banding started at the turn of the century.